

DEVELOPMENT OF ROBOTICS IN LOGISTICS

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Digital technologies are rapidly taking over one of the most difficult areas of the economy – logistics. It is expected that in a couple of years the bill of robots for processing goods will go to hundreds of thousands.

Classical commerce began to rapidly turn into electronic commerce which changed the logistics sector beyond recognition. Consumers have also changed. Formerly, they used to shop on the Internet for "little things" – fast food, books, gadgets. Today, almost everything can be purchased through the Network – from hairpins to a car and wholesale batches of production equipment. Traditional retail offered the buyer what was on display. In the era of e-commerce, consumers choose goods on a variety of storefronts comparing prices, quality of service, and, of course, terms and delivery time [1].

The latter factor is often pivotal, so the final word belongs to the retailer with the fastest logistics, that is, with robotic warehouses. Amazon is the most vivid example of how the correct organization of storage and delivery of goods can turn a small online bookstore into a multibillion-dollar multi-profile enterprise on a global scale.

Robotization of warehouses has a number of significant advantages. This means reducing personnel costs, increasing the efficiency and speed of tasks performed by robots, and the ability to optimize storage space. Enterprises that already use warehouse robotics were able to duly appreciate the advantages of automated warehouse processes during the coronavirus epidemic. It was at this

time that the ability to solve many tasks with minimal use of human resources came to the fore.

So far, fully robotic operation of warehouses is impossible without the participation of an operator. The process of robotization is gaining momentum, and the management of all warehouse processes without human intervention in the future is a real prospect.

The relevance of the topic of robotic warehouses arose long before the pandemic. Their advantage is to increase business efficiency, including minimizing the impact of annual fluctuations in the volume of product processing in warehouses, which increases operational efficiency. It is also worth noting the exclusion of the "human factor", which, in turn, has a positive effect on the quality of operations. Among the disadvantages one can mention the high cost of new systems, though any novel technology becomes more affordable and more reliable over time [2].

According to the study conducted by Markets and Markets research in 2023, it is expected that the warehouse robotics market will grow by 12% annually, and by 2028 it will reach a volume of \$8.88 billion. Such rapid growth is due to the transition of large companies, online retail, to the robotic organization of warehouses.

References

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